allies *R. salicinum*, and *acerinum* in not maturing its asci during the winter as they do: but the stroma is developed in spring, and bears asci in early summer.

King's Lynn. CHARLES B. PLOWRIGHT.

PLATE 53.—Fig. 1. *Rhytisma*, nat. size. 2. Section of ditto 3. Ascus and sporidia × 500. 4. Sporidia × 500. 5. Pycnidia resembling *Hendersonia*. 6. Free conidia. 7. Conidia on sterigmata from Tulasne. 8. Fusiform stylospores. 9. The same when free.

CLASSIFICATION OF PYRENOMYCETES.*

Several advances have been made by Continental Mycologists of late years, towards a carpological classification of the Ascomycetes. Some objections have but recently been stated by the writer in the "Popular Science Review;"† and the last volume of "Transactions of the Woolhope Club," includes some observations by Mr. C. E. Broome on the same subject. Professsor Saccardo's recently published scheme affords an opportunity for a further consideration of the basis of the classification proposed. Whatever may be the merits of Professor Saccardo's scheme, these must be subsidiary to the main question whether the basis is a sound one, and on this point we have already expressed a very decided opinion. The system adopted by Fries, with some minor modifications which experience has suggested, is based mainly on the vegetative system. External features, which can be determined often by the unaided eye, usually by means of a pocket lens, and only very rarely, and in peculiar instances, by resort to the low powers of a microscope, must commend itself, other conditions being equal, to the mycologist. It surely must be preferable to adopt a system by means of which an individual plant can, with little doubt or hesitation, be at once referred to its correct genus, leaving to microscopical examination its specific features, than to invert the order, and make microscopical examination essential to the determination of the genus, whilst external features are ignored. No one can doubt for a moment how much the determination of a collection of new plants is facilitated by the ability to group them at once in their proper genera. This is impossible with a carpological scheme, such as that proposed by Saccardo. Experience has proved that *Xylaria* is a natural and irreproachable genus, based on external features, on the clavate or branched stroma, and without any regard whatever to the character of the fruit. Because the sporidia are simple and coloured, it may be in all known species, no attempt has been made to alter or split up the genus, but its principal feature is not carpological.

* Conspectus Generum Pyrenomycetum Italicorum, systemate carpologico dispositorum, auctore. P. A. SACCARDO.

† Pop. Sci. Rev., July, 1875, on "The Tendencies of Systematic Botany."

Hereafter it may be that a species with septate sporidia would have to be excluded if artificial are to give way to natural affinities, and secondary features to be promoted to the exclusion of primary. In like manner, *Dothidea* has always been regarded as a very natural though less perfectly characterized genus, but unfortunately the sporidia are more variable, and hence eight genera in three groups, represent the hyaline simple spored, the hyaline uniseptate, and the coloured septate spored. If the proposed scheme is to be fully carried out, it must be considerably augmented, and there is no reason why, if pressed to its logical conclusions, nearly every species should not have a claim to be regarded as the type of a new genus. In Professor Saccardo's scheme there are seven typical groups—

1. Allantosporæ.
2. Hyalosporæ.
3. Phæosporæ.
4. Didymosporæ.
5. Phragmosporæ.
6. Scolicosporæ.
7. Dictyosporæ.

It is presumed that the same terms represent the same things in all cases, but that is not practically the case, for in *Perisporiacæ* we find that *Hyalosporæ* are simple (page 1), in *Sphæriaceæ* they become 1-3 septate (page 5), in *Perisporiaceæ* globose, ovoid, or oblong; in *Sphæriaceæ* ovoid, fusiform, or oblong; in *Hypocreaceæ* ovoid-cylindrical, and sphæroid in *Hysteriaceæ*. From the scheme it would appear that the above groups represent—

1. Sporidia sausage-shaped, almost colourless.
2. Sporidia hyaline, simple, or 1-3 septate.
3. Sporidia simple, coloured.
4. Sporidia bilocular.
5. Sporidia coloured, septate.
6. Sporidia filiform.
7. Sporidia muriform.

These characters are not definitely stated as applicable to all the families, but under some a diagnosis is given which is not identical with that in others. (Compare pp. 1 and 5; 3 and 9; 2 and 7.) It is not so much with this grouping of genera that we are concerned, although that is clearly open to criticism, as with the primary features of the genera themselves, and here we cannot imagine that any practical mycologist could possibly place together as nearest allies, *Capnodium elongatum*, *Sphæria herbarum*, *Sphæria obducens*, *Cucurbitaria Berberidis*, *Valsa fenestrata*, and *Valsa vestita*, and yet these are the types of six consecutive genera, composing one group. All sense of affinity or relationship must be wholly obscured by infatuation for the one idea of conformity in shape, colour, and septation of the sporidia. One seems prepared to encounter almost anything after such a notion of botanical affinities, and even *Microthyrium microscopicum*, with *Sphæria punctiformis* and *Sphæria epicymatia* in juxta-position is only accepted as additional evidence of the fact, so often exemplified in the world,

that when men, however highly educated, suffer themselves to be caught in a stream, they are rapidly overwhelmed, and how devotion to a single idea may warp the judgment and confiscate all other considerations.

The question which should be determined satisfactorily is, especially with regard to the Ascomycetes, what are the safest, soundest, and most natural groups in which, as genera, the species should be classed for purposes of study? Should the vegetative system be adopted as the basis, or should the reproductive, or should both be combined as much as possible? We do not hesitate to express our conviction that the vegetative system should be adopted in conjunction with the reproductive, but that the latter should be subsidiary to the former. Our strongest objection to the modern carpological arrangements is that they adopt the reproductive almost absolutely, and ignore the vegetative, except when it harmonizes with the mathematical idea. If it were not so we should never see *Sphæria phomatospora* placed next to *Sphæria fimbriata*, or *Diatrype stigma* close to *Sphæria millepunctata*. It cannot claim to be even a satisfactory carpological system, which recognizes as nearest allies *Sphæria putaminum* and *Sporormia intermedia*. Surely such affinities (?) must have been inserted as a satire on a carpological classification, for whoever has seen the magnificent sporidia of Schweinitz's American *S. putaminum* and knows the diminutive quadrilocular dissilient sporidia of the dung *Sphæria* called *Sporormia minima*, and *Sporormia intermedia*, must confess that if such indication of affinities is all that we are to expect from a "Carpological disposition," it is a most decided and indubitable failure.

Professor Saccardo has expended considerable labour in the production of his "System," which was foreshadowed by Notaris in 1844, and since applied by Fuckel, Winter, Nitschke and others in Germany. All have had some share in unsettling the old method, without ensuring unanimity in the new, for each has his own method, the only point of agreement being a Carpological basis, other coincidences following accidentally. We could have wished that so much industry, energy, and persistency had been expended in a better direction, and it is with regret that we feel compelled to oppose our esteemed friends both in Italy and Germany. Far be it from us to depreciate the labours of Continental mycologists, who, without a single exception, have always been ready to afford us every assistance in their power, most promptly and courteously, whenever we have had occasion to appeal to them. Nevertheless we recognize it as a duty, albeit not a pleasant one, to protest against the introduction and extension of a false basis of classification.